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09/788,437

02/21/2001

Albert M. Leung

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04/23/2003

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EXAMINER

FERGUSON, MARISSA L

ART UNIT

PAPER NUMBER

2854

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/788,437

Applicant(s)

LEUNG, ALBERT M.

Examiner

Marissa L Ferguson

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2854

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 and 30-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 and 30-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: ..

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 2/11/03 have been fully considered but they are not persuasive of any error in the below prior art rejection.

A) On page 2 paragraph 2 of the February 11th 2003 response applicant argues with respect to claim 1, that the reference does not show or suggest stiction between a member and a substrate. The examiner notes that Fushinobu may teach to eliminate stiction, however there is stiction present between a member and a substrate. Also, with regards to the applicant's response wherein the reference does not teach monitoring temperature on page 2, paragraph 3, it would have been obvious to provide means of monitoring temperature for the advantage of preventing overheating of the device, such devices are well known in the art.

B) Regarding claims 1-21 and 30-43, applicant argues that the claims apply to a pressure sensor, however with respect to claims 1-21 and 30-43 the preamble of the claim has not been given any patentable weight because it has been held that a preamble is denied the effect of a limitation where the claim is drawn to a structure and the portion of the claim following the preamble is a self – contained description of the structure not depending for completeness upon the introductory clause. *Kropa v. Robie*, 88 USPQ 478 (CCPA 1951).

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, 12-14, 16-19, 21, 30-32 and 36-43 are rejected under 35

U.S.C. 103(a) as being unpatentable over Fushinobu (U.S. Patent 6,127,765) in view of Smith (U.S. Patent 6,343,514).

Regarding claims 1-4, 21, 30, 31 and 41-43, Fushinobu teaches the invention claimed: a pressure sensor comprising a member (22) adherent by stiction (Abstract) to a surface of the substrate (21) and a means for heating a member (23), a surface of a member in contact with a substrate (Figure 4), and a means for heating a member comprising an electrically conductive pathway and a source of electrical current (Column 3, Lines 25-48).

Regarding claims 5-12, 16, 32 and 36, Fushinobu teaches an electrically insulating layer (34) on a surface of a member, a member comprising polysilicon and an electrically insulating layer comprising a layer of silicon dioxide (Column 3, Lines 49-67 and Column 4, Lines 1-9), and comprising an electrically insulating layer on a surface of a substrate (Column 3, Lines 59-61).

However, Fushinobu does not explicitly disclose a first and second pressure sensor and a first/second resistor in a Wheatstone bridge configuration, wherein a first sensor is connected between, a first input point and a second sensor connected

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between a second input point, a temperature member a surface roughness including plateaus and valleys.

Regarding claims 1,4,13,14,19,30,32, 37 and 40, Smith discloses a first (6) and a second pressure (41) sensor and a first/second resistor (41-46) arranged in a Wheatstone bridge configuration (Column 8, Claims 2 and 3, Lines 41-51), wherein a first sensor is connected between, a first input point and a first output point wherein a second sensor is connected between a second input point (Figures 3 and 4) and a temperature member (42).

With respect to claims 2,17,18, and 21, the surface roughness that comprises valleys and plateaus, it is common to have some degree of roughness due to etching techniques. Hence, a matter of experimental choice as to the exact degree of roughness.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention taught by Fushinobu to include surface roughness, a temperature member and two pressure sensors as taught by Smith for the purpose of monitoring pressure as well as recording temperature of a combined sensor device.

3. Claims 8-11 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fushinobu (U.S. Patent 6,127,765) in view of Smith (U.S. Patent 6,343,514) as applied to claims 1-7 ,12-14, 16-19, 21, and 30-32 above, further in view of Fung (U.S. Patent 5,589,810).

Fushinobu, as modified, discloses the claimed invention except a bridge extending between cantilever members, cantilever members attached to a substrate by pads, a bridge having a central collapsed portion, a pattern of plateaus and valleys, and a semiconductor wafer. Fung discloses a bridge member (16) extending between cantilever members (12 and Figure 1), cantilever members attached to a substrate by pads (34,35), and a bridge having a central collapsed portion (Column 5, Claim 1a pattern of plateaus (305) and valleys (Column 3, Lines 30-64) and a semiconductor wafer (101) having a surface.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention taught by Fushinobu, to include the elements as taught by Gogoi et al., for the purpose of improving the accuracy of capacitance, to the elements as taught by Fung, for the purpose of improving semiconductor pressure sensors that requires high temperature stability.

4. Claims 15 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smith (U.S. Patent 6,343,514) in view of Gogoi et al. (U.S. Patent 6,156,585) and Fung (U.S. Patent 5,589,810) as applied to claims 1-14, further in view of Black et al (U.S. Patent 4,463,336).

Smith et al., as modified, discloses the claimed device except metallic masking layer and p-n junctions. Black discloses metallic masking layer (Column 3, 67-68 and Column 4, Lines 1-19) and p-n junctions (Column 3, Lines 22-25).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the device of Smith, as modified, to include the metallic masking layer and p-n junctions, as per the teachings of Black, for the purpose of manufacturing ultra-thin microelectronic pressure sensors.

Conclusion

5. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marissa L Ferguson whose telephone number is (703) 305-3194. The examiner can normally be reached on (M-T) 6:30am-4:00pm and every other (F) 7:30am-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Hirshfeld can be reached on (703) 305-6619. The fax phone

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numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

Marissa L Ferguson
Examiner
Art Unit 2854

MRF

April 17, 2003


Dan Colilla
Primary Examiner
Art Unit 2854